



NEWS

ILLINOIS READY MIXED
CONCRETE ASSOCIATION



E'TICKETING

IRMCA, IDOT, Welsch Ready Mix, BCMI Corp., and RW Dunteman go paperless for a pilot pour

Promotion

- Measuring promotion effectiveness
- A little time makes a big impact

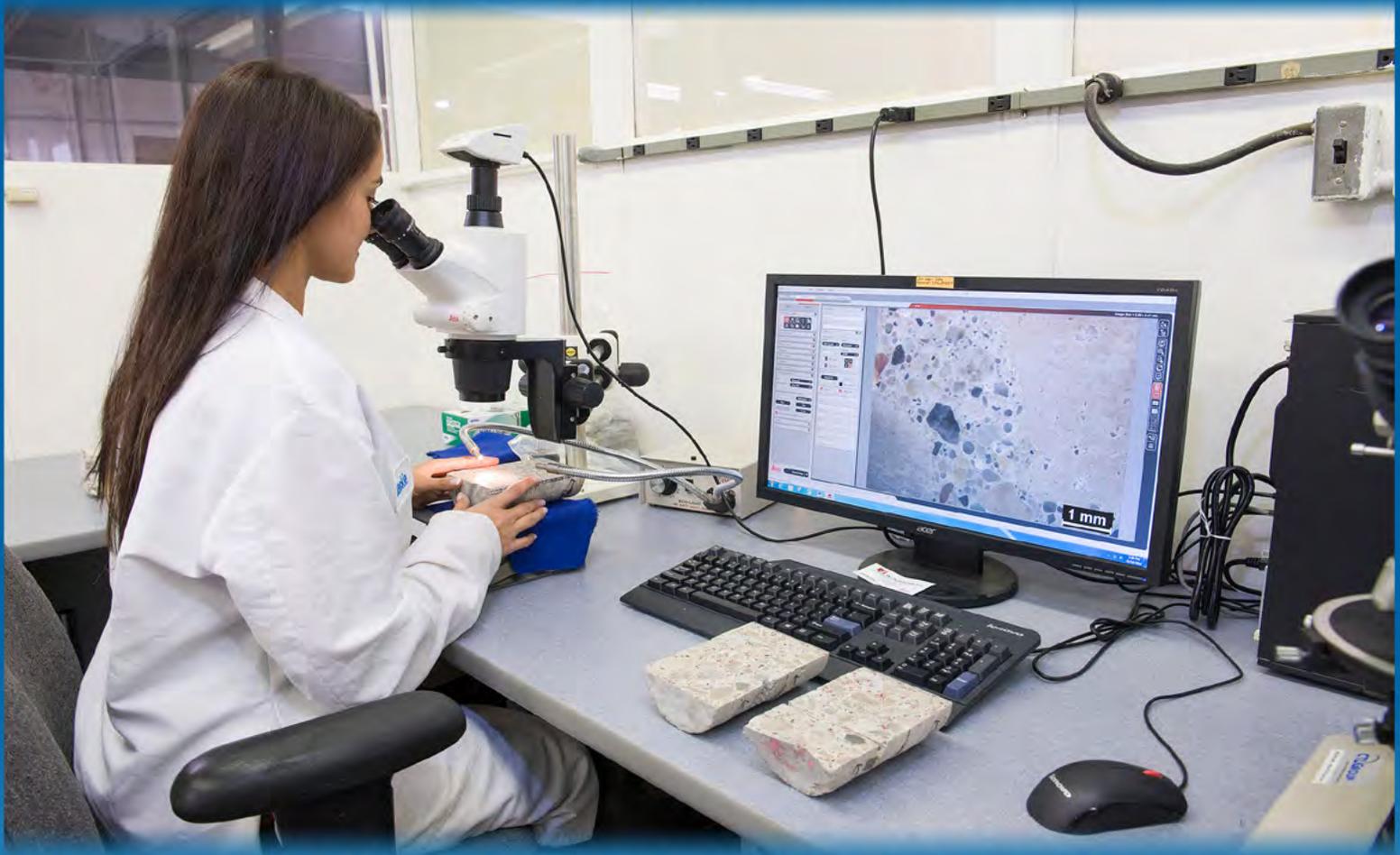
Cement

- Benefits of slag cement
- Cement slurry in full-depth reclamation

Sustainability

- Reducing the carbon footprint of concrete

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Contractor R.W. Dunteman places concrete delivered by Welsch Ready Mix during a paperless E'Ticketing pilot project with IDOT District 1.

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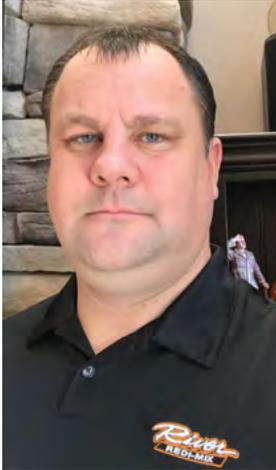
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FROM THE PRESIDENT



It has been an interesting year to say the least. Not sure if interesting is the best word to use. We could substitute probably a hundred different words and it would still accurately describe 2020 to date. So far it seems to have been a decent year for the ready-mix industry in our area. I am optimistic that we will finish the year strong, but I am concerned about what next year may bring as many businesses and industries were not as fortunate as we have been these last 5-6 months.

IRMCA has encountered some difficulties, though. Much of what Jim and Theron do in their everyday activities involves face-to-face interaction with our members and their customers to achieve the goals set. Hosting OES workshops, Tech meetings, and even our board meetings all become more difficult tasks without the ability to have that face-to-face interaction. Jim, Theron, and JoAnn have all done an excellent job of adapting and overcoming these difficulties to keep IRMCA on track. They have used conference calls, zoom meetings, and other media outlets to hold these events.

IRMCA is still available to assist in any way we can. It just may come in a different format than what we are all traditionally used to seeing. Please continue to use these resources and participate in the workshops, committees, and meetings.

Though we did have to cancel our Summer Golf Outing because the course was closed, the Fall Outing was a great success. As of now we are planning the 2021 Xtreme Conference, and I am hoping it too can be a success. I am looking forward to seeing many of you in attendance. The interaction of our members at these meetings and events is what fuels many of the new ideas for our businesses.

I wish everyone a Merry Christmas and a Happy New Year and hope to see you at 2021 Xtreme Conference!

Brandon Thetard

Brandon Thetard
President

Our mission is to be the voice for the ready mix industry in Illinois; to promote the use of quality ready mixed concrete through innovative educational programs, and to accomplish common goals as an organization that cannot be done individually.

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FROM THE EXECUTIVE DIRECTOR



We don't know what we don't know! Never before have those words been truer! COVID-19, a new infectious disease, has invaded our society and our lives and we still don't know what we don't know!

What we do know and can be thankful for is that we are what is called essential workers. I don't want to imagine what it would have been like if our industry had been locked down. But we were not. It is not business as usual, but many of us have had a very busy season. Also, we have learned some new things that

we will likely carry on after the COVID-19 pandemic is over, such as effectively working remotely from home, social distancing, accelerating electronic ticketing to limit person to person contact with paper and pencils, and learning more about hygiene and the value of personal protective equipment.

Hopefully, there will not be a delayed effect that will hurt business in the future. Hopefully our members will finish the year strong and race into next spring without a pandemic choking our economy.

Our members are resourceful. Unlike most other industries who have a routine schedule and simple budgeting, we face challenges of uncertainty every day. We have a record of being solution-minded with a can-do spirit and will adapt to whatever the future throws at us.

IRMCA is having a good year as we continue doing what we do and keep on growing. Maybe not fast, but strong! Our efforts to promote, train, and educate our members while also working the changing dynamics at the Capitol in Springfield will continue strong in 2020 and will be even stronger in 2021.

We won't change *we don't know what we don't know*, but we will continue to adapt and sustain our industry to continue to be the best delivered, most innovative, best building product available over any other. And each of you, our IRMCA members, is *what we do know* – the best in the business!



Jim Randolph
Executive Director



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Pilot project contractor R.W. Dunteman places the concrete from producer Welsch Ready Mix. More than 6,000 cubic yards was delivered for this project located at Weber Road and I-55 in Bolingbrook.

E'TICKETING

IRMCA, IDOT, Welsch Ready Mix, BCMI Corp., and RW Dunteman go paperless for a pilot pour

JIM RANDOLPH, IRMCA Executive Director

For the past two years IRMCA has been working with the Illinois Department of Transportation Central Bureau of Construction and Materials as well as IRMCA member software providers Command Alkon, Sysdyne, and BCMI to begin integrating electronic ticketing and recordkeeping into ready mix businesses. With the rapid spread of COVID-19, the

electronic, paperless concept became even more important for the safety of the plant, drivers, inspectors, and IDOT personnel.

When IDOT indicated that they were ready to try an E'Ticketing pilot project, Mike DeJong, president of Welsch Ready Mix, Inc., suggested the upcoming Bolingbrook Weber Road project in District 1. Welsch teamed up

with fellow IRMCA members RW Dunteman, contractor, and BCMI Corp., who provided the real time text-based paperless solution.

Numerous pre-pour planning meetings were held, some by ZOOM, to establish what was needed for data input and how it would flow from the batch ticket to everyone's devices. Then Welsch and BCMI facilitated

Welsch Ready Mix, Inc. delivers concrete totally paperless from their Bolingbrook plant. This was the first IDOT E-Ticketing pilot project in District 1.



a mock run with a virtual pour in advance of the actual pour.

On the day of the pour participants were on their devices in real time receiving data when a truck was batched and leaving the plant, enroute, arriving, pouring, and returning to the plant. Batch weights, testing data, comments, cubic yard running totals, and other information required by IDOT was also shared. Overall the communication went very smoothly **without paper!** Very few adjustments were needed and expectations were exceeded.

One challenge was the use of third party dump truck tracking because they were not equipped with tracking devices. A large group of association and industry representatives had a ZOOM meeting facilitated by IRMCA following the pour to immediately begin brainstorming how to integrate dump trucks into the tracking system. Solutions are in the works.

Also after the pour, a debriefing meeting was held via ZOOM. High marks were given by IDOT, and we can expect to see additional projects in the future as district engineers and contractors opt for paperless projects.

Other IRMCA producers have also had success with E-Ticketing on Illinois Tollway projects and private jobs. In addition to increased safety, E-Ticketing allows for more efficient data handling, order taking, dispatching, batching, and delivery.

I am pleased at how the industry reacted through the COVID-19 period to provide electronic data to any device and made it very user friendly with all the data easily transferrable to other entities for recordkeeping purposes. Like most technology, it is going to keep improving fast! ■

If you would like to propose an E-Ticketing paperless job in your IDOT district, or if you would like to learn more about Electronic Ticketing and phase into a paperless future, please give Jim Randolph a call @ 217-725-0096, and we will get the ball rolling.

E-TICKETING PILOT PROJECT

IRMCA

IDOT District 1

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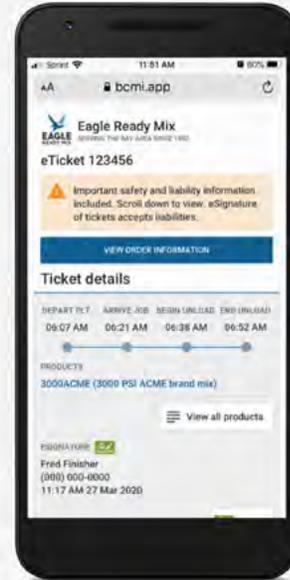
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Vince Cirrintano, Sr., Knight Engineers and Architects, Inc. Construction Engineer

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Ozinga supplied CarbonCure concrete for the construction of the McDonald's Chicago Flagship, reducing the building's carbon footprint by 30,000 pounds.

REDUCING THE CARBON FOOTPRINT OF CONCRETE

Embracing innovation to build a more sustainable future

REBECCA HUSSMAN, *CarbonCure Technologies Communications Manager*

The importance of concrete cannot be overstated—it is the backbone of modern civilization. Unrivaled in its strength, durability, and resilience, it is the only building material we can rely on to keep us safe from the elements and natural disasters. When analyzed from a holistic perspective, in comparison to other materials, concrete's extremely long life cycle actually makes it a more sustainable choice in the long-term.

However, the world's most consumed construction material has its downside. Specifically, it has an emissions problem.

The process of making cement, a key ingredient of concrete that holds all of the concrete mix components together, is emissions-intensive. First, limestone must be mined from a quarry, and then once treated with a silica source, heated in a kiln at 2,700 degrees Fahrenheit. It is then ground into a fine

powder and when additives are added, it becomes cement.

And every pound of cement produced generates roughly a pound of carbon dioxide (CO₂) emissions.

There's no way around it: roughly 8 percent of global greenhouse gas emissions come from cement and concrete due to the carbon footprint of cement production and the sheer large volume of concrete mixes containing that cement.

“ Canadian-based company CarbonCure has commercialized a carbon utilization technology that enables concrete producers to use less cement in their mixes without impacting the concrete’s strength, durability, or fresh and hardened properties. ”

However, research and development into ways of reducing concrete’s environmental footprint have culminated in recent years, opening up new avenues for emissions reductions from within the concrete industry itself.

“Concrete is the most-used building material in the world. And because we use so much of it, any reductions we make in its footprint will have a big impact on global emissions,” said Jeremy Gregory, Executive Director of the MIT Concrete Sustainability Hub, in an article for *MIT News*.

Recent development of carbon-reducing technologies, such as carbon capture and utilization technologies, enable concrete producers to reduce the environmental impact of concrete one mix at a time.

For example, Canadian-based company CarbonCure has commercialized a carbon utilization technology that enables concrete producers to use less cement in their mixes without impacting the concrete’s strength, durability, or fresh and hardened properties.

CarbonCure’s technology injects a precise dosage of industrial-grade CO₂ into ready mix concrete during production. Once injected into the wet

concrete mix, the CO₂ reacts with calcium ions from cement to form a nano-sized mineral (calcium carbonate). This CO₂ mineralization process increases the compressive strength of the concrete mixes by an average of 10 percent at 28 days, enabling the reduction of cement content without sacrificing strength.

Of course, the potential amount of cement that can be reduced per mix is dependent on the composition of that particular mix; however, based on CarbonCure’s customer data, the reduction percentage averages at 4-6 percent. If we assume 5 percent of cement has been reduced in a mix treated with CO₂ via CarbonCure, **25 pounds of CO₂ are saved per every cubic yard of concrete produced.**

Real-world applications of this carbon-reducing solution for concrete producers and builders are popping up in more locations across Canada and the United States (and soon, the rest of the world). Even contributing small amounts of this low-carbon concrete can have a substantial positive environmental impact.

For example, in 2018 Ozinga supplied approximately 830 cubic yards of concrete made with CarbonCure for the construction of the McDonald’s Chicago Flagship location at Clark and

Ontario. As a result, about 30,000 pounds of CO₂ emissions were saved, which is equivalent to the emissions from driving 34,000 miles in an average gas-powered vehicle or 18 acres of forest absorbing CO₂ for a year.

When asked why Ozinga was one of CarbonCure’s earliest adopters, the company’s President, Marty Ozinga IV, said, “Chicago’s architectural and engineering community is greatly attracted to reducing their carbon footprint, and Ozinga is proud to partner with CarbonCure to deliver sustainable solutions to our region.”

When adopting CarbonCure, the CarbonCure Technical Services and Support department works with quality control teams before, during, and after the technology is installed. The TSS team works with QCs to identify the right mixes to optimize through joint reviews of historical mix data. Once this is determined, the testing phase begins, where the TSS team determines the optimal CO₂ doses for each of the selected mixes. Then the TSS representatives guide QCs through the cementitious reduction process, conducting strength tests to confirm no losses in strength with the optimized mixes after 28 days.



Ozinga has installed CarbonCure in 31 plants, and to date has saved more than 1,400 tons of CO₂ – which is equivalent to the CO₂ absorbed by 1,700 acres of forest in a year.

“To find a design that strengthens concrete is always a good thing, to discover a way to make concrete more sustainable is a great thing; but to find a solution that does both is exactly the kind of progress Ozinga wants to be a part of,” said Ryan Cialdella, Ozinga’s Vice President of Research and Development.

“We have been very satisfied with the technology and the quality of the concrete produced with CarbonCure, which is why we are continually adding it into more of our plants,” Cialdella added.

The hands-on support that TSS offers continues after installation as well. When the producer is ready to use a CarbonCure mix in a project, for instance, TSS representatives offer specialized mix design submittal guidance for including mixes with CO₂ in commercial projects.

Beyond TSS, CarbonCure offers a suite of ongoing support and helpful tools that enable producers to maximize both their cost savings and emissions reductions, including sales and marketing training, market development services and access to resources, and real-time usage data via the myCarbonCure platform.

For more information, watch a short video at bit.ly/carboncure to learn more about how CarbonCure works and how it helps concrete producers grow their businesses while shrinking their carbon footprints. To add CarbonCure to your plant and build a more sustainable Illinois, contact Regional Sales Manager Ted Jones, PE, at +1 (303) 905-6946 or at tjones@carboncure.com to get the conversation started. ■



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THE BENEFITS OF USING SLAG CEMENT IN CONCRETE MIX DESIGN

DREW BURNS, Slag Cement Association Executive Director

Concrete professionals look for quality, versatile materials that provide various benefits to concrete structures, and slag cement is quickly becoming a material of choice for a variety of reasons. Understanding the different inherent benefits of using this material is important to get the best possible result, so the Slag Cement Association and its members work to provide the construction industry with technical resources about its benefits and applications.

Increased Strength Gain

Slag cement increases the strength of conventional concrete and is often a vital component in producing high-strength concrete. The higher the percentage of slag cement used (up to 50 percent) in portland cement concrete, the higher the 28-day strengths will be. Many projects have achieved consistent field concrete strengths in excess of 8,000 psi. Additionally, engineers have specified ternary or even quaternary mixtures containing slag cement, portland cement, and pozzolans in projects requiring strengths greater than 12,000 psi, such as Reliant Stadium in Houston and Key Tower in Cleveland.

Concrete flexural strengths in excess of 1,000 psi are common with mixes containing slag cement. Flexural concrete strength is increased due to a stronger bond between the cement paste and aggregate particles. The St. Pete-Clearwater Airport apron pavement replacement in Florida and Ten Hudson Yards in New York City are examples of projects that benefit from the high flexural strengths achievable with slag cement.

Alkali Silicate Reaction (ASR) Mitigation

Alkali-Silica Reaction occurs when the alkalis in portland cement react with certain reactive aggregates and water to form an expansive gel that causes concrete to prematurely deteriorate. Slag cement mitigates ASR by combining with the alkalis in portland cement and making them unavailable for the ASR reaction. It also lowers the permeability of the concrete, limiting the amount of water that is available to support the reaction. In some cases, it will



lower the total alkali content of the cement paste. Examples of mitigation for reactive aggregates using slag cement include the I-275 pavement reconstruction and the I-96 Interstate pavement near Detroit, Michigan.

Reduced Permeability

When slag cement is used as part of the cementitious material in a concrete mixture, it reacts with water and calcium hydroxide to form additional calcium silicate hydrate. CSH is the glue that provides strength and holds concrete together.

used slag cement to help reduce chloride ion penetrability to less than 2,000 coulombs (classified as low), by the Rapid Chloride Permeability Test (ASTM C1202).

Reducing Thermal Stress in Mass Concrete

One of the most difficult challenges in designing mass concrete structures is limiting the concrete temperature differential between the center and the surface of the concrete. If this differential becomes too large, thermal cracks can develop in the concrete.

Sulfate Resistance

Waterborne sulfates, found in some soils, seawater, and wastewater treatment plants, may react with hydration products of portland cement to cause cracking or softening of the paste. The use of slag cement replacing a portion of the portland cement in a concrete mixture can decrease the likelihood of sulfate attack by reducing the total amount of potentially reactive hydration products in the system. Additionally, slag cement reduces the permeability of the concrete and limits the ability of sulfates to penetrate the concrete.

Examples of mitigating sulfate attack with slag cement include William Preston Memorial Bridge in Maryland and the city wastewater treatment plant in Clyde, Ohio.

“ Slag cement is a recovered material from the iron production process, and because of this, reduces the energy normally used to create concrete. ”

Improved Workability/Finishability

Concrete mixes with slag cement tend to have a smoother and more workable consistency than when working with only portland cement. Slag cement enhances the consolidation and pumping of concrete by improving its rheology, or flowable nature. This leads to an easier-to-work-with paste and a smoother concrete finish. Most concrete made with slag cement will have less bleed water than concrete made with portland cement alone due to less water required for the same slump. Bleeding rates are slowed by having a more finely ground cement, and virtually all slag

The additional CSH produced modifies the pore structure of the paste resulting in lower permeability. The level of improvement is proportional to the percentage of slag cement in the mixture, normally between 25 and 65 percent. Lower permeability reduces chloride ion ingress and thus reduces the corrosion potential of the structure. Projects such as JFK International Airport Runway Reconstruction and St. Croix Crossing Bridge in Louisiana

Slag cement has been used successfully to substantially reduce the temperature of mass concrete. When used at high replacement rates, slag cement will provide lower heat in mass concrete than concrete produced with low heat cement. Examples include 75 percent slag cement replacement in the I-895 Pocahontas Parkway footings in Richmond, Virginia, and 70 percent slag cement replacement in the Mississippi River Bridge.

cement used in the United States is ground finer than Type I or Type II cements.

Replacement rates

One of the main benefits of slag cement use is its ability to be used in higher percentage replacement of portland cement compared to other materials. Suggested replacement rates for slag cement use vary depending on the application type but can range anywhere from 25-80 percent. The SCA website, slagcement.org, provides the

replacement rate information in Table 1 as well as more detailed information. These percentages indicate replacement for portland cement by mass. These replacement rates are suggested for individual applications and are based on historical performance. Variations in material sources and environmental conditions may require alternate substitution rates. Consult your slag cement supplier for additional assistance, especially when new to using the material.

Understanding the carbon impact of slag cement.

Lowering the embodied carbon impact of concrete is becoming a more important factor in creating sustainable concrete across applications. Slag cement is a recovered material from the iron production process, and because of this, reduces the energy normally used to create concrete. The SCA has published an industry-wide Environmental Product Declaration on slag cement that provides quantifiable environmental data on the use of this material. With this information, the association was able to create a free Life Cycle Assessment Calculator that helps demonstrate and compare the environmental impacts of various mix designs.

As with all concrete mixtures, trial batches should be performed to verify concrete properties. Results may vary due to a variety of circumstances, including temperature and mixture components, among other things. It is important to work with your cement producers to understand the best way to use the product. The SCA website has a listing of member contacts by state. Visit slagcement.org for more information on these topics and the different resources available on slag cement use. ■

TABLE 1. Suggested replacement rate of slag cement

CONCRETE APPLICATION	SLAG CEMENT
Concrete paving	25 - 50%
Exterior flatwork not exposed to deicer-salts	25 - 50%
Exterior flatwork exposed to deicer with $w/cm = 0.45$	25 - 50%
Interior flatwork	25 - 50%
Basement floors	25 - 50%
Footings	30 - 65%
Walls & columns	25 - 50%
Tilt-up panels	25 - 50%
Pre-stressed concrete	20 - 50%
Pre-cast concrete	20 - 50%
Concrete blocks	20 - 50%
Concrete pavers	20 - 50%
High strength	25 - 50%
ASR mitigation	25 - 70%
Sulfate resistance	
Type I equivalence	25 - 50%
Type V equivalence	50 - 65%
Lower permeability	25 - 65%
Mass concrete	50 - 80%

CEMENT SLURRY'S ROLE IN FULL-DEPTH RECLAMATION

Cement slurry delivery system using a ready mixed concrete truck for full-depth reclamation presents new growth opportunities

DON CLEM, P.E., NRMCA Vice President of Local Paving; Wayne S. Adaska, P.E., PCA Director of Pavements and Geotechnical Markets; Greg E. Halsted, P.E., PCA Manager of Pavements and Geotechnical Markets

Across the country, thousands of miles of federal, state, county, and city roads are rapidly deteriorating and in need of immediate rehabilitation. Most of these roadways were constructed utilizing an asphalt wearing surface with untreated granular base materials and were often under-designed for today's heavier traffic loads.



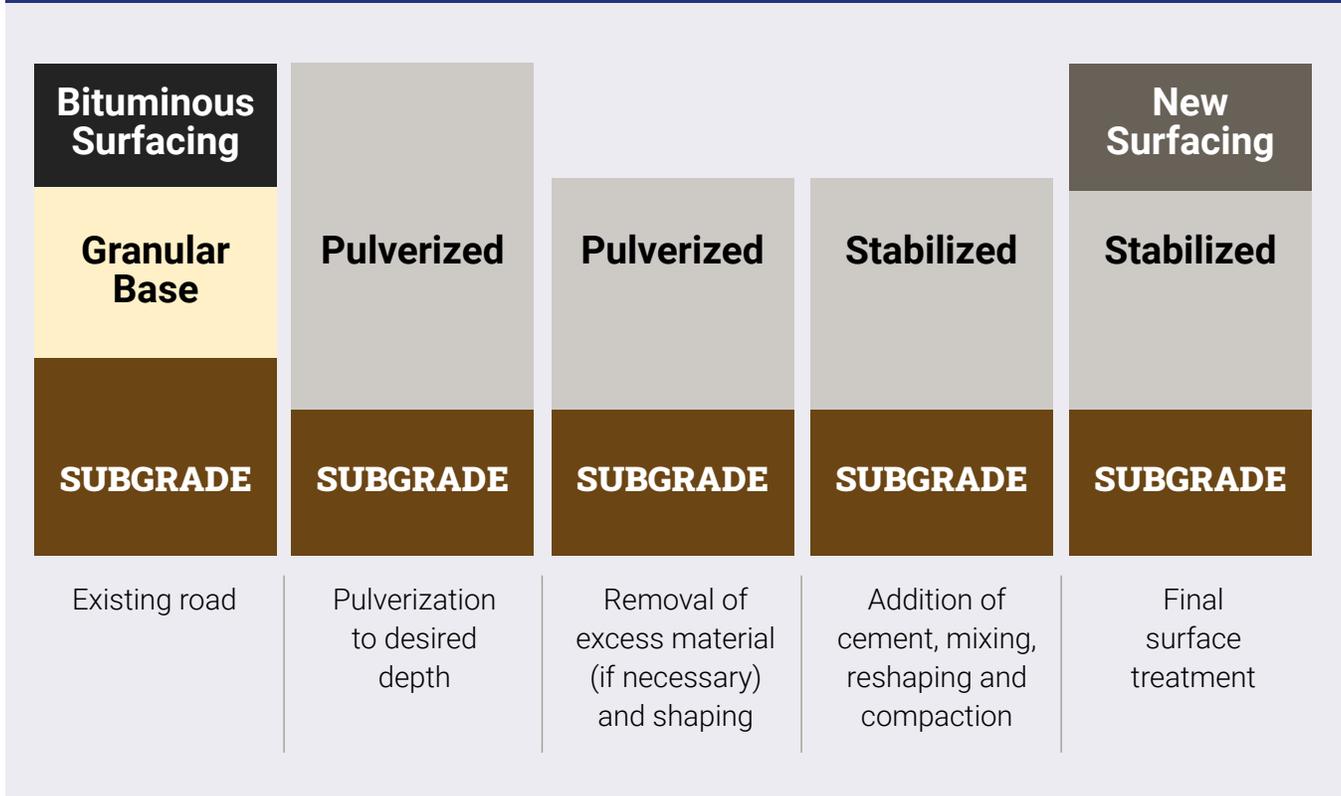
Cement slurry is spread from a ready mixed concrete truck.
Photos courtesy of Scott Hall, Sagamore Ready Mix, (left) and Dr. Spencer Guthrie, BYU.

Salvaging these existing failed flexible pavements is a good practice, both environmentally and economically, because they still contain good granular material that, when blended with portland cement, can be reused and recycled into a strong, durable new base. A process commonly referred to as full-depth reclamation is

a technique in which the old asphalt pavement and a portion of the underlying base, subbase, and/or subgrade materials are pulverized and blended together with portland cement to create an enhanced roadway base material. The steps for FDR consist of pulverization of the existing materials, removal of any materials for grade control,

incorporation of any additional materials, mixing, initial shaping of the new base mixture, compaction, final shaping, curing, and the application of a new surface or wearing course, which may be concrete, asphalt, or a chip seal application, depending on the anticipated traffic and desired roadway life (Figure 1).

FIGURE 1. Steps for construction of full-depth reclamation with cement



Two methods – dry cement powder or cement slurry

There are two generally accepted methods of delivering the cement for an FDR project: dry cement powder application or cement slurry application. The cement slurry application, which is usually delivered by a ready mixed concrete truck, offers some advantages over the dry powder application. The main advantage is the elimination of the dusting issue sometimes associated with the dry powder application. In addition, the unconfined compressive strength using the slurry process generally meets or exceeds that of the dry powder spreading process [1]. Ready mixed concrete trucks can also access tight areas that are not accessible by larger powder spreader trucks.

FDR mix design process

After a road has been selected as a candidate for FDR, a field evaluation covering the full length, width, and depth of the proposed pavement structure should be performed to determine what materials make up the current pavement structure. The field evaluation of the current pavement structure will help to determine the amounts, composition, and suitability of the materials that will be blended for the reclaimed base. The best way to determine this will be to sample the roadway using a coring rig or a jackhammer for the asphalt and an auger or post hole digger for the base and subgrade. These samples are then taken to a geotechnical laboratory to perform the FDR mix design.

The mix design will include a sieve analysis to determine the gradation of the materials, the compaction requirements with the maximum dry density and optimum moisture content of the materials, and the cement content needed to bring these materials to the project-specified unconfined compressive strength. The geotechnical laboratory will provide this information to project personnel to establish the correct field cement spread rate as shown in Table 1.

For more complete information on field sampling and mix design preparation for FDR pavement bases, refer to the PCA publication *Guide to Full-Depth Reclamation (FDR) with Cement*, www.cement.org/docs/default-source/fdr/guide_to_fdr_with_cement_jan_2019.pdf.

TABLE 1. Cement spread requirements

Percent cement by dry weight of material	Density = 115 lb/ft ³					Density = 125 lb/ft ³				
	Cement spread requirements in pounds per square yard for compacted thicknesses					Cement spread requirements in pounds per square yard for compacted thicknesses				
	8 in.	9 in.	10 in.	11 in.	12 in.	8 in.	9 in.	10 in.	11 in.	12 in.
3.0	20.7	23.3	25.9	28.5	31.1	22.5	25.3	28.1	30.9	33.8
3.5	24.2	27.2	30.2	33.2	36.2	26.3	29.5	32.8	36.1	39.4
4.0	27.6	31.1	34.5	38.0	41.4	30.0	33.8	37.5	41.3	45.0
4.5	31.1	34.9	38.8	42.7	46.6	33.8	38.0	42.2	46.4	50.6
5.0	34.5	38.8	43.1	47.4	51.8	37.5	42.2	46.9	51.6	56.3
5.5	38.0	42.7	47.4	52.2	56.9	41.3	46.4	51.6	56.7	61.9
6.0	41.4	46.6	51.8	56.9	62.1	45.0	50.6	56.3	61.9	67.5
6.5	44.9	50.5	56.1	61.7	67.3	48.8	54.8	60.9	67.0	73.1
7.0	48.3	54.3	60.4	66.4	72.5	52.5	59.1	65.6	72.2	78.8
7.5	51.8	58.2	64.7	71.2	77.6	56.3	63.3	70.3	77.3	84.4
8.0	55.2	62.1	69.0	75.9	82.8	60.0	67.5	75.0	82.5	90.0
8.5	58.7	66.0	73.3	80.6	88.0	63.8	71.7	79.7	87.7	95.6
9.0	62.1	69.9	77.6	85.4	93.2	67.5	75.9	84.4	92.8	101.3
9.5	65.6	73.7	81.9	90.1	98.3	71.3	80.2	89.1	98.0	106.9
10.0	69.0	77.6	86.3	94.9	103.5	75.0	84.4	93.8	103.1	112.5

Mix proportioning

Cement slurry is comprised of water, portland cement, and sometimes chemical admixtures such as a hydration stabilizer and/or water reducer. The use of a hydration stabilizer extends the setting time of the cement, which can be especially desirable on projects constructed during hot weather and/or involving long transit distances. Water

reducers, which are less commonly used, can reduce agglomeration of the cement particles and thereby facilitate a higher degree of cement hydration. Mix designs for cement slurry typically contain approximately 70 percent solids by weight, which equates to a water to cement ratio of 0.43 [2]. At a w:c ratio of 0.43 the amount of cement and water in a cubic yard of cement slurry would be

2200 lb and 946 lb (113 gal), respectively. The cement slurry can contain approximately 2 to 3 percent entrapped air. Trial tests should always be conducted to determine the appropriate w:c ratio and type and quantity of admixtures needed that will result in a fluid consistency that does not separate and easily flows down the chute. Table 2 shows estimated batch weights at various w:c ratios.

TABLE 2. Estimated batch weights for cement slurry at various water to cement ratios

	W:C Ratio = 0.43			W:C Ratio = 0.46			W:C Ratio = 0.50		
Material	Weight (lb)	Specific Gravity	Volume (cu ft)	Weight (lb)	Specific Gravity	Volume (cu ft)	Weight (lb)	Specific Gravity	Volume (cu ft)
Cement	2200	3.15	11.2	2130	3.15	10.8	2020	3.15	10.3
Water	946 (113 gal)	1.00	15.2	980 (117 gal)	1.00	15.7	1010 (121 gal)	1.00	16.2
Air (2%)			0.6			0.5			0.5
Total	3146		27.00	3110		27.00	3030		27.00

An important factor to remember about cement slurry application rate is that it is based on the weight of cement. The water simply acts as a facilitator to allow the discharge of the cement from the truck to the placement area.

Charging the truck mixer is typically done by initially adding approximately 80 percent of the anticipated water usage. While the mixer is running, the required amount of cement is slowly added to the mixer. The balance of the water is then added, and the mixing continues until the slurry achieves a creamy consistency. Care must be taken in charging the mixer to avoid the formation of cement balls, consequently, the reason for adding the cement slowly. Experience has indicated that charging the truck to only 60 to 80 percent of capacity is desirable to ensure adequate mixing and minimize spillage during transport.

Spreading cement slurry

The correct field slurry spread rate is determined following submission of the geotechnical report. Three important parameters are needed in order to determine the appropriate spread rate – soil density, cement content, and depth of treatment. Let’s say that the geotechnical laboratory determined that the cement content necessary to achieve the project requirement is 5 percent based on the maximum dry density of the roadway materials of 125 lb/ft³. If the depth of the new FDR base is to be 9 inches, Table 1 indicates the spread rate of cement would be 42.2 lb/yd² or 4.7 lb/ft². It doesn’t matter whether the cement quantity is spread in dry or slurry form, the quantity of cement would be the same.

The coverage area is determined by dividing the weight of cement from the batch ticket by the dry

cement spread rate from Table 1. Assume the truck carried 17,600 lb of cement (2200 lb/yd³ X 8 yd³). In this case the coverage area would be 3745 ft² ((=2200 lb/yd³ X 8 yd³)/4.7 lb/ft²).

Prior to spreading, the area to receive the slurry should be prepared so that the slurry remains in place without excessive runoff. This would include having the stabilization contractor initially pulverize the area to be treated and leaving the surface in a roughened condition with shallow furrows to contain the slurry. In addition, earthen berms may need to be constructed along the perimeter of the placement area to avoid slurry runoff. On steep slopes, earthen berms can be constructed within the placement area.

The perimeter of the treated area should be clearly marked. In our example the coverage area

for an 8-yd³ truck was 3745 ft². If the truck spreads the slurry in a 16-ft width, the length of coverage would be 234 ft (3745 ft²/16 ft).

A main benefit of cement slurry is that slurry age (the time between production of the slurry until its incorporation into the soil) does not adversely impact the properties of the cement-treated soil. Studies have shown that slurry age up to 2 hours makes very little difference on the compressive strength of the

tickets when the truck arrives on-site prior to discharging.

Another way to check whether the correct amount of cement has been added to the slurry is to check the density of the slurry using a mud balance in accordance with ASTM D4380 Standard Test Method for Density of Bentonitic Slurries. For our example with the w:c ratio of 0.43 the slurry density would be 116.5 lb/ft³ (3146 lb/27 ft³) or 1.87 g/cm³. This test provides a relative indicator

The increased percentage will depend on the amount of water in the slurry, dry density of the cement treated material, and depth of treatment. Again, using our example, the spread rate of the cement is 4.7 lb/ft² and the w:c ratio is 0.43. Therefore, the amount of water would be 2.0 lb/ft² (4.7 lb/ft² cement X 0.43).

Consequently, the moisture content of the cement-treated material would increase by 2.1 percent ((2.0 lb/ft²/125 lb/

“ Due to concerns with dust associated with the dry cement application process, use of the cement slurry application process is growing. ”

cement-treated material [1,3]. However, high temperatures may significantly reduce this holding time. Therefore, trucks should be scheduled appropriately so there is no significant truck waiting time at the site.

Quality control and inspection

The two major areas for cement slurry inspection are to verify that the correct quantity of cement is in the slurry and that the cement slurry is spread uniformly over the designated area. The correct amount of cement and cement slurry volume is recorded on each truck batch ticket. The inspector should collect these batch

of mix proportions and is not recommended for use as a specification requirement.

The slurry spread rate is determined as previously mentioned by delineating the area of coverage. This will vary depending on the cement content, depth of mixing, and w:c ratio of the slurry. The one thing to remember is the cement quantity per ft² is the same whether it is spread with dry cement or cement slurry.

The stabilization contractor should be made aware that the cement slurry will increase the moisture content of the treated material by a certain percentage.

ft³)/0.75-ft)). If the optimum moisture content of the cement-treated material is specified as 8 percent and in-situ moisture content of the untreated material is 7 percent, then the moisture content during the mixing operation would be 9.1 percent (7.0 percent untreated material + 2.1 percent slurry water). In this case, the additional slurry water is within most specification requirements of +/- 2 percent of optimum moisture content. However, it is important that the stabilizing contractor be made aware of this added moisture so he can accommodate this during the initial pulverization.

Slurry market growth

Due to concerns with dust associated with the dry cement application process, use of the cement slurry application process is growing. FDR projects using cement slurry have already been specified in Indiana, Kansas, Louisiana, Ohio, Oregon, Texas, Utah, Idaho, Wyoming, and in other states. The cement slurry delivery equipment being utilized includes the chute of a ready mixed concrete truck and a slurry spreader attachment. A method of applying cement slurry is available for any size of project, and, with an experienced operator, all these approaches can produce successful results.

Conclusion

The reclamation of failed flexible pavements using portland

cement has many advantages: conservation of non-renewable resources through the reuse of existing materials, elimination of the need for new granular base materials, reduction in both hauling and energy costs, and elimination of bumps, dips, ruts, potholes, cracks, and preliminary patches. In addition, new stabilized base courses can be shaped to restore the desired surface crown and cross-slopes, preserve drainage flow at curb and gutter sections, and retain adequate clearance at overhead structures. Furthermore, the use of a cement slurry eliminates the dust associated with the application of dry cement. As the FDR market continues to expand, the use of cement slurry will present a growth opportunity for many ready mixed concrete companies.

References: [1] Dixon, P. A., W.S. Guthrie, D. L. Eggett. *Factors Affecting the Strength of Road Base Stabilized with Cement Slurry or Dry Cement in Conjunction with Full-Depth Reclamation*, Transportation Research Board, January 2012. [2] Guthrie, W. S., E. D. S. Smith, R. J. Stevens, and T. W. Emery. *Cement Slurry Application Using a Ready-Mixed Concrete Truck: Best Practices for Urban Pavement Construction*. In Proceedings of the Intermountain Engineering, Technology, and Computing Conference, Orem, Utah, October 2020. [3] Sebesta, S., J.P. Harris. *Slurry Stabilization Chemistry of Cement-Treated Soils*, Portland Cement Association, SN3108, April 2009. ■



Illinois Ready Mixed Concrete Association

The 2021 Conference is POSTPONED due to COVID restrictions.

IRMCA is already planning multiple webinars on promotion, technical topics, OES, regulatory, special guest speakers and other topics of interest to keep our members well informed and moving forward in 2021 in lieu of the 2021 Xtreme Concrete Conference.

Success

plan
↓
do
↓
measure



MEASURING PROMOTION EFFECTIVENESS

RAYMOND C. MCVEIGH, *Great Lakes Cement Promotion Council Executive Director*



That which gets measured, gets accomplished. I am not sure of the original source for this pearl of wisdom, but I first heard it from Roland Johns with Southdown Cement (now merged with Cemex) in the mid 90s. Regardless of its source, I have found this pearl to be persistently true over the course of my involvement with the concrete industry.

But, when promotion of ready mix concrete is what you want to accomplish, how do you measure the effectiveness of your promotion efforts? How can you tell if you have “moved the needle” on the measurement indicator? This is a question with which the cement industry has struggled for decades.

You can, of course, look at NRMCA data on production of

cubic yards of concrete by state. But volume varies with economic conditions and is not easily tied to specific promotion efforts or programs. Measurement of promotion effectiveness is more complex.

The best analysis that I have found with respect to measurement of promotion effectiveness is a white paper prepared by Gary Polsen, then recently retired from Lehigh Portland Cement Company, in the mid 90s, at the request of the North East Cement Shippers Association. Mr. Polsen examined concrete promotion success measurement as a whole and by specific market segments, including ready mix, pipe, precast, masonry, and paving. He identified several different measurement approaches.

Market share tracking

Arguably the best approach is tracking market share. A program can still be effective in an environment of declining volume if market share is increasing. Conversely, a program may be ineffective if volume is increasing but market share is diminishing. Unfortunately, it is difficult to get market share data. Initially you need to define your market. Are you measuring all construction activity? Are you measuring all local streets and roads? Are you measuring the basement market? Are you measuring all parking lots? Are you measuring just industrial parking lots? Are you measuring driveways? The answer to these questions will depend on what your promotion

program is designed to target. Once that is determined, you need to find a reliable and comprehensive source for your data. Unfortunately, such a source is rare.

Indeed, the only such source of which I am aware is the OMAN system that collects bid tab data from all DOTs throughout the US. The Portland Cement Association obtains and parses that data for its OMAN report on paving market shares, which breaks out concrete and asphalt market shares based on both dollars spent by the DOT and material volumes used. It is very useful information if your target market is DOT paving. But, if your target market is parking lots or even local paving that does not pass through a DOT system, there is no comprehensive and reliable data source from which to draw.

Attitudinal measures

If market share data is not available, another approach is attitudinal measures. This works well where you have a limited universe of decision makers with respect to the product being promoted (designers, engineers, architects etc.). An attitudinal measure is achieved by surveying the universe of decision makers with respect to their perceptions and attitudes towards your product before the promotion and then surveying them again after the promotion activity and determining whether the program was effective in changing their attitudes toward the product. But the effectiveness of this measure is

dependent upon the willingness of those decision makers to respond to your survey. It also works best with a relatively focused, concentrated and short term promotion program. It is less useful for more prolonged or ongoing promotion efforts.

Impact measures

Another alternative approach to measuring promotion effectiveness is impact measures. This approach identifies discrete measures of audience reached, projects converted, and/or volume generated. Depending on the nature of the promotion program being implemented, audience reached might be measured by number of webinar attendees, technical pamphlets distributed, continuing education units awarded, trade shows attended, sales calls made, promoter hours invested, web site hits etc. Impact measures are not as illuminating as market share data. Many measure activity rather than results and can give the false impression of success in an expanding market even though market share may be diminishing. But, where market share data is not available, impact measures may be the best measure available.

Legislation and code measures

Finally, another alternative measure may be legislation enacted or defeated or code changes implemented. This measure would be applied to very specific promotion efforts that frequently have the potential

“ The IRMCA Board and its staff have embraced promotion measurement as a valuable management tool. ”

for tremendous changes in market share. For example, when Great Lakes Cement Promotion Council and Illinois Ready Mixed Concrete Association teamed up to get the Illinois legislature to adopt a Life Cycle Cost statute that requires IDOT to award larger paving projects on the basis of life cycle costs rather than initial cost, concrete's market share of IDOT work went from 9 to 30 percent in four years.

Choosing a methodology

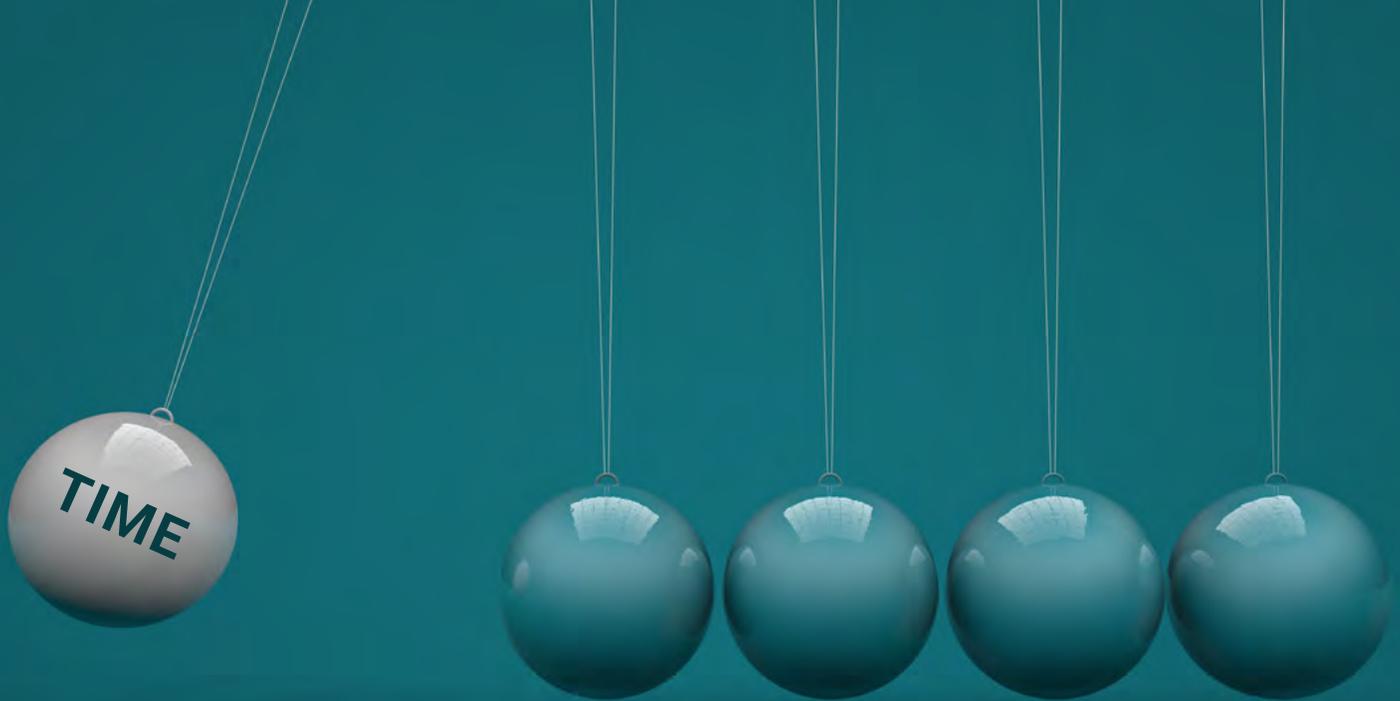
GLCPC has been encouraging its promotion partners to measure their promotion effectiveness using whichever of these methodologies they think best. Our encouragement is driven by two purposes. First, it is just good management. That which gets measured gets accomplished. Second, over my 33 years of involvement with concrete promotion, cement companies have been willing to invest in the promotion activities of their customers' organizations, but they are increasingly required to justify the allocation of scarce promotion budgets on the basis of measurable results to demonstrate return on investment.

IRMCA has become an industry leader in measuring promotion effectiveness. The IRMCA Board and its staff have embraced promotion measurement as a valuable management tool. IRMCA monitors OMAN market share data relating to IDOT activity, generates impact measures (especially project conversion data for the Chicagoland area reflecting Theron Tobolski's parking and local paving promotion successes), and documents legislative successes in Springfield. The framework for effective promotion success measurement is in place. But, it can be improved by producer member participation.

Next level promotion measurements for IRMCA

IRMCA's project conversion data in Chicagoland is impressive, but I suspect that it is not complete. There are many projects that are not captured in the data because producer members supply the project without reporting the job to IRMCA staff. This is especially problematic with what I term legacy projects. When IRMCA staff successfully converts an engineer or developer to choose concrete for a project, that project gets included in the

measurement data. However, once the engineer or developer is converted to the merits of concrete, she/he may have little subsequent contact with IRMCA staff but still design/build any number of additional projects with concrete that do not get included in the measurement data. We need the producer members that supply the concrete to report these legacy projects to IRMCA. Yes, this is a bit of a pain. But the payback is that the IRMCA Board sees the effectiveness of its programs, IRMCA members see the benefits of IRMCA membership, and GLCPC is able to justify its promotion investment in IRMCA to the upstream management of its cement company members. Win-win-win all around. So, pick up the phone and report your parking lot, intersection, and local paving projects to IRMCA staff. You will be part of taking IRMCA to the next level of industry-leading efforts to document the effectiveness of its promotion programs and activities. You will help maximize cement industry investment in IRMCA. And it won't cost you any additional dues. ■



A LITTLE TIME MAKES A BIG IMPACT

Theron Tobolski, IRMCA Assistant Executive Director

***Do you ever wish you were supplying concrete for more projects?
Do you have days where your concrete plants are struggling to
supply concrete throughout the entire day?***

What can you do as a concrete producer to create more concrete in your area for your company? Creating concrete projects and trying to change the mindsets of owners or engineers needs a team approach, and that

is what the Illinois Ready Mixed Concrete Association promotion team uses to get more concrete in your area. This program has you as a concrete producer or concrete contractor working with IRMCA and the National Ready

Mixed Concrete Association. With this team approach in Illinois we have flipped 443,000 c/y from asphalt to concrete in just 3.5 years through our parking lot program. As ready mix companies you have a

million things on your mind, and I am sure concrete promotion is not one of them, but you could create more concrete projects in your area by just focusing a little time working with IRMCA on promotion. Many others in Illinois and NRMCA who have worked as part of this team can tell you why promotion is important, and I asked some of them to share their experiences.

requirements in many site development areas. But in most cases he, like your local doctor, is a general practitioner. When it comes to concrete pavement, NRMCA and IRMCA's promotion team are specialists. **Promotion** is the key to helping recognize the need for a concrete pavement specialist.

Promotion is how we inform, educate, and demonstrate

with NRMCA in emphasizing the benefits of the Design Assistance Program. Since April 2017, together IRMCA and NRMCA have reviewed 910,000 c/y of parking lot projects and successfully converted 443,000 c/y to concrete. That's half of all the parking lot pavement we've evaluated. Many of these projects were in the design phase but quite a few others were well into construction.

“ Since April 2017, together IRMCA and NRMCA have reviewed 910,000 c/y of parking lot projects and successfully converted 443,000 c/y to concrete. ”

Luke McHugh

Luke McHugh, National Ready Mixed Concrete Association Senior Director of Local Paving

If you ask me why concrete promotion is important, the answer is simple...**people don't know what they don't know.** You wouldn't expect your local doctor to perform open heart surgery on you, but he needs to recognize that you should seek help from a specialist. The same is true when it comes to concrete pavements. Your site civil engineer needs to be knowledgeable about engineering design principles, specifications, codes, and

to engineers, contractors, developers, and owners that concrete pavement can be an affordable alternative to asphalt. Through the NRMCA's Design Assistance Program, we provide **free** design assistance, which may include pavement thickness proposals, joint layouts, specification development, or answers to other design and construction-related questions. Our program success can be measured by the area of pavement converted from asphalt to concrete or the increase in concrete yardage.

IRMCA is one of the most active state organizations that partners

IRMCA has truly set the bar as a leader in the number of DAPs submitted, yardage evaluated, and yardage converted.

Success builds on success and what we've seen from the program is truly amazing. Engineers become more willing to specify concrete pavements and offer pavement options to their clients. Owners like concrete pavements because they understand the benefits of reduced maintenance costs verses asphalt pavements.

Ultimately, end users enjoy the durability of pothole free pavements and the safety

of brighter concrete pavements at night. So, when bidding your next site development project with an asphalt parking lot or an overdesigned concrete pavement, look to NRMCA and IRMCA Promotion for free concrete pavement design assistance. We specialize in helping everyone know what we know about concrete pavements.

whitetopping overlays at our concrete 101 conference in January.

Over the last couple of years while working with IRMCA we have flipped many asphalt parking lots to concrete parking lots including a recent 900 c/y Applebee's in southern IL. Theron makes this process very easy. You get the construction design from the contractor and

Neil Hustedde, Quad-County Ready Mix Corporation

Theron and I met with several engineers, contractors, and owners about the concrete parking lot promotional program. Everyone we met was very receptive to the information presented to them. In fact, the meetings we had were key to landing a couple of jobs for us. One was the corporate headquarters for Poettker

“ If you are not in a partnership with IRMCA and utilizing their amazing sales tools, you are missing some golden opportunities. ”

Scott Maberry

Scott Maberry, Kienstra - Illinois, LLC. Vice President

If you are not in a partnership with IRMCA and utilizing their amazing sales tools, you are missing some golden opportunities.

The last few years along with IRMCA I have put on a concrete 101 conference for my customers, IDOT personnel, engineers, and architects. The conference has been a very big success because of the efforts of Jim, JoAnn, and Theron. Theron and I just sold a whitetopping overlay project to a customer that learned about

send it to Theron, who then works with NRMCA to provide a concrete pavement design. Theron will then go with you to speak to the contractor to seal the deal. Theron is one of the best concrete promoters I have ever met. I strongly suggest you utilize his sales skills to help flip asphalt parking lots to concrete parking lots. After all, he is included in your dues!

We are lucky to have such a great staff at IRMCA. Jim, Theron, and JoAnn all do an exceptional job. I feel very fortunate to be able to partner with them.

Construction in Breese, Illinois, and the other was the new Mach 1 Travel Plaza in Mt. Vernon, Illinois. Both projects turned out great and should get the attention of other upcoming jobs. Thanks for the opportunity!

Bill Aupperle, Aupperle Construction

IRMCA has been an extremely helpful asset these past few years in helping us secure pavement work, flipping asphalt to concrete lots, and providing engineering recommendations as well as being a great concrete soundboard. The pavement designs they have offered and

the backup information supplied has single-handedly given our designs the mathematical clout needed to have owners feel confident in the design-build process we offered.

The conference calls and email threads between the owner, contractor, and IRMCA have been extremely helpful by allowing the owner to talk with a reputable and independent third party about their project based on their needs and simultaneously acting as a verification process for us with the owner.

IRMCA and partner NRMCA have also turned our requests around within days of presenting them with the project. The membership in this group has seen an outstanding ROI, not to mention the great relationships we've made in the process. I would highly recommend any contractor (not competing with us lol) to join this group and use the tools they offer.

**Ryan Cialdella, Ozinga
Vice President of Research
and Development**

Ozinga has found the IRMCA parking lot program that utilizes the NRMCA Design Assistance

Program to be extremely effective in reaching out to the engineering community to clarify many misconceptions around using concrete as a pavement. The program has allowed us to provide professional engineering designs for a variety of applications that have resulted in many projects utilizing concrete that previously would not have. These designs help specifiers assemble the proper profile to show not only the cost competitiveness of concrete but the overall life cycle value that concrete brings. IRMCA has constructed and executed a well thought out program that targets industrial engineers and developers to educate and network with to provide excellent response times for pavement design review as well as a timely resource for the engineering community.

This program works great for Ozinga as it acts as an extension of our company with resources that we currently do not have and ultimately results in more concrete going out the door! If you are an IRMCA producer and you are not currently working with IRMCA to promote concrete in your market I highly recommend you start.

**Justin Faulk, JustCore
Concrete Construction
President**

A few years ago I had the opportunity to meet with IRMCA Assistant Executive Director Theron Tobolski and learn about IMRCA's program helping contractors such as myself convert projects specked for asphalt to concrete pavement.

I was provided with predesigned pavement recommendations for different needs based on the type of business and intended traffic use. We also have received help from IRMCA on projects designing concrete pavement options for specific client needs. This has given our clients the third party assurance to help them feel confident with their designed pavement. This has been a successful tool working with owners and general contractors.

Being a member of IRMCA has been a great experience. It has helped us become a better and more knowledgeable concrete contractor and has helped us grow our business. ■

As you can see from these testimonials IRMCA can work with you to promote concrete in your area. Please give IRMCA a call at 309.862.2144 so we can start working together.

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ACHIEVING SUCCESSFUL RESULTS WHEN DEALING WITH DIFFICULT EMPLOYEES

STEVE LINDLEY, Wille Brothers Company Operations Manager and IRMCA OES Committee Co-chair

How many of you have that one employee who seems to always operate in the gray area when it comes to being compliant with your company policies? I'm sure if we sat down in a big circle, we could go on for days recounting stories of employees who have at one point or another made our lives very difficult. How many times did you feel like the employee was putting the entire company in jeopardy or setting a bad example in front of his or her peers, but you just didn't know how to deal with them regarding the issues at hand?

Some may say that progressive discipline or being tough on your employees is the easiest way to deal with difficult ones, but I have found the exact opposite to be true. Sometimes difficult employees don't necessarily understand how they are being difficult, or the little things they do seem innocuous to them, so they fail to see how it creates a difficult situation for you.

When I first transitioned into my role as operations manager, I inherited a handful of what some might classify as difficult employees. I immediately had

other managers recounting tales of how they had been trying for years to get a particular employee to wash down his truck and to leave the yard within a reasonable amount of time after his truck was loaded. I started compiling metrics that could be used to compare this employee's performance to the rest of the yard. I spent a few days observing him whenever he was in the yard washing down, watching how he spent his time and looking for ways that he could expedite the process and get out of the yard faster while still maintaining safety.

Once I compiled all of the washdown times for all of the drivers assigned to the same yard over the last year, the numbers were staggering. This particular yard had an average of 11 minutes from the time loading completed until the time the drivers left the yard. The driver in question was the slowest in the yard at an average of 24 minutes! Other managers had said that they had been on him for years to speed up, but without any real hard numbers to compare the drivers to each other, no one could ever provide the driver with real data that he could improve upon.

I sat the driver down one day during a rain delay and put the numbers in front of him. The look on his face was priceless when I presented him with the FACTS. He almost instantly refused to believe the information that had been laid out in front of him. As I tried to explain the numbers to him, I could see him growing exceedingly frustrated. I explained to him that he was coming in at more than twice the average for the yard, and that I needed him to make an improvement. I explained that we are surrounded by fierce competition and that if we could gain an hour back each week in washdown time from each driver, it would result in a savings of about 2500 hours a year companywide! In the end, I told him to take the numbers with him and look them over and that

we would discuss it at a later date. We crossed paths a few days later, and I asked him what he thought about the numbers I had presented him with a few days prior.

The driver said that he was initially very upset, and that he thought that I was accusing him of being a bad employee. He said once he had some time to digest the information it really made

“ A situation that could have continued being very difficult ended with the employee giving me a handshake and thanking me for getting him motivated once again! ”

sense to him. He thanked me for giving him the kick in the butt that he needed. He explained that he had been going through some things in his personal life and had lost sight of being productive at work because of

it. A situation that could have continued being very difficult ended with the employee giving me a handshake and thanking me for getting him motivated once again!

The improvement was almost immediate from that day going forward. The driver began to make a noticeable improvement in not only his washdown times in the yard, but also in his washdown times on the jobsite. Almost a year and half later, the driver is still washing down and getting out of the yard with the rest of his coworkers. He is happier to be at work and is more comfortable approaching me whenever he has an issue or sees something that we could improve upon as a company.

The adage that you catch more flies with honey than you do with vinegar rings true in most situations. While there may be times that we have exhausted all our resources to successfully retain our employees, positivity and trust will always be the best way to start fixing a bad situation. By sharing information with our employees and being as direct as possible with them whenever there is an issue that needs to be dealt with, we will consistently be more successful in achieving our results. ■

EPA COMPLIANCE IN THE ERA OF COVID-19

MITCH MARIOTTI, VCNA Prairie LLC Environmental & Lands Manager and IRMCA OES Committee Chair

Without exception, the current COVID-19 pandemic has changed the way we do business in the ready mix concrete industry. Environmental compliance has certainly become a bit more challenging as well.

In recognition of these additional challenges, the Illinois Environmental Protection Agency provided all regulated industries with guidance for compliance expectations in a Compliance Expectations Statement that reads in part:

Underlying the Agency's ongoing mission is a dedication to protect the health and welfare of citizens and the environment of Illinois. All regulated entities are expected to take every possible step to ensure ongoing compliance with environmental requirements, including all terms and conditions contained in permits, so that all regulated facilities or activities are operated and maintained in a manner safe for human health and the environment. Governor Pritzker issued disaster proclamations and Executive Order 2020-10 that impose necessary guidelines and restrictions on citizens and businesses in Illinois as part of the state's measures to address COVID-19. Should those current health and safety restrictions also result in an inability to

comply with environmental requirements, the Agency will exercise enforcement discretion when appropriate. This approach is only applicable to situations brought on by, and directly related to, responses to COVID-19 that will not create or result in harm or risk to human health or the environment. One example of such a situation is difficulty in submitting routine reporting or monitoring information. These instances are best considered on a case-by-case basis, with interaction between the regulated entity and the Agency prior to the potential noncompliance to allow full discussion of the circumstances. Once restrictions related to COVID-19 preventative measures are lifted, a return to compliance will be expected as soon as possible.

It is important to note IEPA's wording of such phrasing as **the Agency will exercise enforcement discretion when appropriate and case-by-case basis**. This wording certainly leaves much open to interpretation. Reading between the lines, if any aspect of compliance is not able to be accomplished, it would be prudent to have a well sorted out explanation documenting the extenuating circumstances in advance.

IEPA's modified enforcement measures ended on August 31, 2020. Normal non-compliance enforcement resumed on that date, and the EPA expects all regulated parties to be in full compliance with all applicable laws and regulations.

Please monitor IEPA's COVID-19 webpage, www2.illinois.gov/epa/topics/Pages/covid19.aspx, for any last-minute updates to its COVID-19 policy or any enforcement compliance dates. ■

IRMCA Technical Committee



STEPHEN FLEMING, *Technical Committee Chair*

The technical committee has not met as a full group in the past 6 months but has been active at a task group/subcommittee level.

Site Testing Issues

A subcommittee met in early August on this topic. Proper testing, accountability for poor testing, on-site cylinder storage, and the importance of communicating test results were discussed. Meetings with Illinois testing labs are in the process of being arranged.

ASTM C94

IRMCA has joined ASTM C09 and ASTM C09.40 as a voting member and has reviewed balloted changes to ASTM C94, *Standard Specification for Ready-Mixed Concrete*. These significant changes include removing the 90-minute limit for

discharge as well as requiring concrete producers to document the amount of time the concrete is allowed to stay in the truck before it is fully discharged on every delivery ticket. In effect, this could require the concrete producer to ask every customer how long they want the concrete to last in the truck before it is fully discharged when they place their order. IRMCA worked hard on behalf of Illinois ready mix concrete producers to prevent these two changes and find compromise language that would help people who support these changes as well as those who do not support these changes, but the effort was unsuccessful. Ready mix producers should consider joining ASTM Committee C09 on Concrete and Concrete Aggregates as a voting member and get involved. Currently, the

majority of the members that vote on these ASTM changes that directly affect the concrete producers are not concrete-producing companies.

IDOT

IRMCA continues to work with the Illinois Department of Transportation on several topics including identification of mass concrete in project bid documents and identifying proposed research projects that will benefit our industry.

Illinois Tollway

IRMCA has been asked to participate on a Tollway Manual of Test Procedure subcommittee. The current topic is estimating concrete pavement opening strength by maturity. ■

If you have any topics for the technical committee or would like to join, please email Stephen Fleming at sfleming@pointreadymix.com.

2021 | UPCOMING EVENTS

CALENDAR

World of Concrete

February 19-22 | Las Vegas, NV

Illinois Chapter ACPA Annual Meeting

February 3 | Springfield

POSTPONED DUE TO COVID RESTRICTIONS

IRMCA Xtreme Concrete Conference

DUE TO THE UNCERTAINTY OF WHAT THE SAFE DISTANCING REQUIREMENTS MAY BE AT ANY GIVEN TIME, WE WILL GIVE EARLY NOTIFICATION OF COMMITTEES AND OTHER EVENTS IN ADVANCE OF THE MEETING.

**dates subject to change with sufficient notice*

2020 NEW MEMBERS

- Ludell Manufacturing Company
- HUB International Limited
- Xypex Chemical Corporation
- CarbonCure Technologies, Inc.
- BCMI Corp.
- Humir Construction, Inc.
- Adjustable Concrete Construction
- Copenhaver Construction Inc.
- Fritz-Pak Corporation
- B.C.B. LLC



FALL GOLF

Ed Jongsma, Rick Ross, Jeff Bonnema, and Matt Peterson are dressed for cooler than average weather. Temperatures dipped into the 60s.



FALL GOLF

It was a wet week, but the rain held off during the golf outing. Pictured are Aaron King, Todd Demoss, Alan Johnson, and Tom Ellis.



FALL GOLF

JoAnn McKeown welcomes guests as they arrive. Precautionary masks, gloves and mini-hand sanitizer bottles were supplied for each cart.



FALL GOLF

Jonathan Chudacoff, Nick Soto, Brennan Callahan, and Tony Guinta were newcomers to the annual fall golf outing.



FALL GOLF

Lee Newton, Matt Meyer, and Scott Beck were among the 75 event participants at Senica's Oak Ridge Golf Club.



Roberto Montemayor, University of Illinois student, and Civil and Environmental Engineering research assistant, outlines production methods, applications, and benefits of cellular concrete.



Exhibitor Steve Johnson talks with Allan Anderson.



Ben Franklin, Todd Brandenburg, and Tom Buchmiller pictured at one of the one of the 29 conference exhibits.



Bridget Bleigh visits Lee Newton and Scott Beck's exhibit.



XTREME CONCRETE CONFERENCE

Todd Spindler, Sika Corporation North Central Regional Manager, shares information regarding real-time concrete quality measurement from batch plant to job site.



XTREME CONCRETE CONFERENCE

Gene Deets, Derek Leggett, Reid Rummell attend the exhibition, which included four large equipment displays.



XTREME CONCRETE CONFERENCE

Steve Gynn, Kevin Cavanaugh, and Grace Fitzpatrick are among the 259 conference participants.



XTREME CONCRETE CONFERENCE

James Krstulovich, IDOT, shares concrete research updates.



XTREME CONCRETE CONFERENCE

Ryan Scott, GCP Applied Technologies Services Midwest Manager, reviews quantifying a pumping mix using the Sliding Pipe Rheometer.



XTREME CONCRETE CONFERENCE

Mike Ayers, Ph.D., Illinois Chapter-ACPA Executive Director, examines concrete paving issues and solutions from around the globe.



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Image [October 2019]:
Underground Primary Crusher
at Federal Stone Quarry



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- **Romeoville Stone Quarry**
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